

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An optical disc assembly, comprising:
a substrate having a patterned surface and an additional surface, said patterned surface contributing to an information layer of said disc;
~~a plurality of micron-sized chemically reactive features at least one nonoperational structure~~ disposed upon an air-incident surface of said disc; ~~and~~
an operational structure contained in the information layer, said operational structure being trackable by a laser of an optical disc drive when said substrate patterned surface is presented closer to the laser than said substrate additional surface;,
wherein ~~one or more of said plurality of chemically reactive features are~~ nonoperational structure is disposed to be readable concurrently with said operational structure; and
a laser refracting cover attached to said optical disc such that said cover rotates with the rotation of said optical disc, wherein said cover is configured to focus an incident beam on said disc's information layer.
2. (Currently Amended) The optical disc assembly of claim 1, wherein said operational structure is trackably disposed as a forward image in positive relief.
3. (Currently Amended) The optical disc assembly of claim 1, wherein said operational structure is trackably disposed in the plane of said information layer that is most distal to said substrate additional surface.
4. (Currently Amended) The optical disc assembly of claim 1, wherein said operational structure is trackably disposed as a forward image in negative relief.
5. (Currently Amended) The optical disc assembly of claim 1, wherein said operational structure is trackably disposed in the plane of said information layer that is most proximal to said substrate additional surface.

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6. (Currently Amended) The optical disc assembly of any one of claims 1-5, wherein said operational structure includes a wobble groove.

Claims 7-9. (Canceled)

10. (Currently Amended) The optical disc assembly of claim 1, wherein said ~~plurality of chemically reactive features are nonoperational structure~~ is disposed confocally with said operational structure.

Claims 11-12. (Canceled)

13. (Withdrawn) The optical disc of claim 1, wherein said nonoperational structure is an analyte-specific signal element.

14. (Withdrawn) The optical disc of claim 8, wherein said nonoperational structure is an analyte-specific signal element.

15. (Withdrawn) The optical disc of claim 9, wherein said nonoperational structure is an analyte-specific signal element.

16. (Withdrawn) The optical disc of claim 10, wherein said nonoperational structure is an analyte-specific signal element.

17. (Withdrawn) The optical disc of claim 11, wherein said nonoperational structure is an analyte-specific signal element.

18. (Withdrawn) The optical disc of claim 12, wherein said nonoperational structure is an analyte-specific signal element.

19. (Currently Amended) The optical disc assembly of claim 10, wherein said information layer further includes a reflective layer, and wherein said ~~plurality of nonoperational structure is chemically reactive features are~~ disposed closer to the laser than said reflective layer

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when said substrate patterned surface is presented closer to the laser than said substrate additional surface.

20. (Currently Amended) The optical disc assembly of claim 10, wherein said information layer further includes a reflective layer.

21. (Currently Amended) The optical disc assembly of either claim 19 or claim 20, wherein said ~~plurality of chemically reactive features are nonoperational structure is~~ disposed upon an air-incident surface of said reflective layer.

22. (Currently Amended) A trackable optical disc assembly comprising:
an information layer having a structure trackable by a laser of an optical disc reader; ~~and~~
at least one nonoperational structure ~~micron-sized chemically reactive feature~~ disposed upon an air-incident surface of said disc in said information layer, wherein said at least one nonoperational structure ~~chemically reactive feature~~ is disposed confocally with said ~~the~~ trackable structure; ~~and~~
a laser refracting cover attached to said optical disc such that said cover rotates with the rotation of said optical disc, wherein said cover is configured to focus an incident beam on said disc's information layer.

23. (Canceled)

24. (Currently Amended) The optical disc assembly of ~~either~~ claim 22, wherein said trackable structure includes a wobble groove.

25. (Withdrawn) The optical disc of claim 24, wherein said nonoperational structure is an analyte-specific signal element.

26. (Currently Amended) The optical disc assembly of claim 22, wherein said information layer comprises a reflective layer, and wherein said at least one nonoperational structure ~~chemically reactive feature~~ is disposed upon a surface of said reflective layer.

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27. (Currently Amended) The optical disc assembly of claim 22, said disc further comprising:

a substrate, said substrate having a patterned surface and an additional surface; and

a reflective layer, wherein said at least one nonoperational structure ~~chemically reactive feature~~ is disposed closer to the laser than said reflective layer when said substrate patterned surface is presented closer to the laser than said substrate additional surface.

28. (Currently Amended) The optical disc assembly of claim 27, wherein said at least one nonoperational structure ~~chemically reactive feature~~ is disposed upon a surface of said reflective layer.

29. (Currently Amended) The optical disc assembly of either claim 1 or claim 22, wherein said at least one nonoperational structure ~~chemically reactive feature~~ produces at least one discriminable signal during trackable reading of said disc.

30. (Currently Amended) The optical disc assembly of claim 29, wherein said discriminable signal is an amplitude variation in the high frequency (HF) signal.

31. (Currently Amended) The optical disc assembly of claim 29, wherein said discriminable signal is an amplitude variation in the tracking error (TE) signal.

32. (Currently Amended) The optical disc assembly of claim 29, wherein said discriminable signal is an amplitude variation in the focus error (FE) signal.

33. (Currently Amended) The optical disc assembly of claim 1 or claim 22, wherein the duration of at least one signal produced by at least one nonoperational structure ~~chemically reactive feature~~ during trackable reading of said disc provides a substantially quantitative measure of the size of the nonoperational structure ~~chemically reactive feature~~ in the direction of disc tracking.

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34. (Currently Amended) The optical disc assembly of claim 10 , wherein said ~~plurality of chemically reactive features are nonoperational~~ structure is disposed readably upon the laser-proximal side of a light transmissible coating applied to the laser-proximal surface of said information layer, when said substrate patterned surface is presented closer to the laser than said substrate additional surface.

35. (Currently Amended) The optical disc assembly of claim 22, wherein said trackable structure is a holographically-projected image.

36. (Currently Amended) The optical disc assembly of claim 35, wherein said holographic image is projected in a plane confocal with said at least one nonoperational structure~~chemically reactive feature~~.

37. (Currently Amended) The ~~trackable~~ optical disc assembly of claim 35 or claim 36, wherein said projected tracking structure is an image of a wobble groove.

38. (Canceled)

39. (Currently Amended) The optical disc assembly of claim ~~38~~ 1 or 22, wherein said cover is nonintegral to said disc .

40. (Original) The optical disc assembly of claim 39, wherein said cover is reversibly attached to said disc.

41. (Original) The optical disc assembly of claim 39, wherein said cover is moveably attached to said disc.

42. (Original) The optical disc assembly of claim 41, wherein said cover is hingeably attached to said disc.

43. (Currently Amended) The optical disc assembly of claim ~~38~~ 1 or 22, wherein said cover consists essentially of a material selected from the group consisting of plastic and glass.

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44. (Original) The optical disc assembly of claim 43, wherein said cover consists essentially of plastic.

45. (Original) The optical disc assembly of claim 44, wherein said cover consists essentially of polystyrene.

46. (Original) The optical disc assembly of claim 44, wherein said cover consists essentially of polycarbonate.

47. (Currently Amended) The optical disc assembly of claim ~~38~~1 or claim 22, wherein said assembly has a diameter in the radial plane between 110 - 130 mm and a depth between 1.1 - 1.3 mm.

48. (Currently Amended) The optical disc assembly of claim ~~38~~1 or claim 22, wherein at least one ~~chemically reactive feature~~ nonoperational structure is disposed upon the disc-proximal side of said cover.

49. (Currently Amended) A multiple data layer optical disc assembly comprising:
a reflective layer;
an additional reflective layer; ~~and~~
a plurality of nonoperational structures~~chemically reactive features~~;
wherein said reflective layer or said additional reflective layer has a structure trackable by an optical disc reader, and wherein one or more of said plurality of nonoperational structures ~~chemically reactive features~~ are disposed readably with said trackable structure; and
a laser refracting cover attached to said optical disc such that said cover rotates with the rotation of said optical disc, wherein said cover is configured to focus an incident beam on said reflective layer or said additional reflective layer.

50. (Currently Amended) The ~~trackable~~ optical disc assembly of claim 49, wherein one or more of said plurality of ~~chemically reactive features~~ nonoperational structures and said trackable structure are readable by the same optical pickup.

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51. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 49, wherein said additional reflective layer is semireflective.

52. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 51, wherein one or more of said plurality of ~~chemically reactive features~~—nonoperational structures are disposed confocally with a surface of either said reflective layer or of said semireflective layer.

53. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 52, wherein one or more of said plurality of ~~chemically reactive features~~—nonoperational structures are disposed confocally with a surface of said semireflective layer.

54. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 53, wherein one or more of said plurality of ~~chemically reactive features~~—nonoperational structures are disposed on the laser-distal side of said semireflective layer.

55. (Canceled)

56. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 49, wherein said plurality of nonoperational structures ~~chemically reactive features~~—are disposed on the laser-proximal side of said reflective layer.

57. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 52, wherein said plurality of nonoperational structures ~~chemically reactive features~~—are disposed between said reflective layer ~~or of and~~ said semireflective layer.

58. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 49, wherein said trackable structure includes a wobble groove.

59. (Currently Amended) The ~~trackable~~-optical disc assembly of claim 58, wherein said plurality of nonoperational structures ~~chemically reactive features~~—are disposed confocally with said wobble groove.

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60. (Currently Amended) The ~~trackable~~ optical disc assembly of claim 58, wherein said reflective layer and said semireflective layer are reversibly separable.

61. (Currently Amended) An optical disc system for detection of nonoperational structures~~chemically reactive features~~, comprising:

~~a trackable~~ an optical disc assembly according to claim 1 or claim 22; and
an optical disc reader.

Claims 62-66. (Canceled)

67. (Currently Amended) A method for making a trackable optical disc assembly having a plurality of readable ~~chemically reactive features~~ nonoperational structures, the method comprising:

applying a reflective layer to the patterned surface of a disc substrate according to claim 1 or claim 22; ~~and~~

disposing a plurality of nonoperational structures ~~chemically reactive features~~ confocally with[[;]] said trackable operational structure; ~~and~~

attaching a laser refracting cover to said optical disc such that said cover rotates with the rotation of said optical disc, wherein said cover is configured to focus an incident beam on said disc's information layer.

68. (Canceled)

69. (Original) The method of claim 67, wherein said trackable operational structure includes wobble groove.

70. (Currently Amended) ~~A-The~~ method of ~~making a trackable optical disc assembly having readable chemically reactive feature data, comprising~~ claim 67 wherein disposing a plurality of nonoperational structures comprises:

disposing ~~a said~~ plurality of ~~chemically reactive feature~~ disposed nonoperational structures on the disc-proximal side of ~~a said~~ light transmissive cover; ~~and,~~

~~attaching said cover to an inverted optical disc according to claim 1 or claim 22.~~

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71. (Currently Amended) A method of using an optical disc reader to read a nonoperational structure ~~chemically reactive feature~~ of a disc, the method comprising trackably reading the optical disc of any one of claim 1 or claim 22 in said reader.

72. (Original) The method of claim 71, wherein said reading further includes detecting high frequency events in said reader's HF signal.

73. (Currently Amended) The method of claim 72, wherein said event duration reports dimensional information about at least one nonoperational structure ~~chemically reactive feature~~.

74. (Original) The method of claim 72, wherein said disc includes a wobble groove.

Claims 75-77. (Canceled)

78. (Currently Amended) An optical disc assembly comprising:
a substrate, said substrate having a patterned surface and an additional surface;
a plurality of ~~chemically reactive features~~ nonoperational structures disposed confocally with said operational structure; ~~and~~
an information layer,
wherein said information layer comprises an operational structure that is disposed in forward image positive relief when said substrate patterned surface is presented closer to a laser of an optical disc reader than said substrate additional surface; and
a laser refracting cover attached to said optical disc such that said cover rotates with the rotation of said optical disc, wherein said cover is configured to focus an incident beam on said disc's information layer.

79. (Currently Amended) An optical disc assembly comprising:
a substrate, said substrate having a patterned surface and an additional surface;
a plurality of ~~chemically reactive features~~ nonoperational structures disposed confocally with said operational structure; ~~and~~
an information layer,

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wherein said information layer comprises an operational structure that is disposed in forward image negative relief when said substrate patterned surface is presented closer to a laser of an optical disc reader than said substrate additional surface; and

a laser refracting cover attached to said optical disc such that said cover rotates with the rotation of said optical disc, wherein said cover is configured to focus an incident beam on said disc's information layer.

80. (Currently Amended) The optical disc assembly of either claim 78 or claim 79, wherein said operational structure includes a wobble groove.

Claims 81-152. (Canceled).

153. (Withdrawn) An optical disc having a readable analyte structure, said disc comprising:

an information layer including a trackable structure that is followed by a read beam of an optical disc reader, said trackable structure implemented to produce a holographic image; and

at least one analyte structure, said trackable structure and said analyte structure being concurrently readable by a single optical pickup.

154. (Withdrawn) The optical disc according to claim 153 wherein said holographic image is projected in a plane confocal with said analyte structure.

155. (Withdrawn) The optical disc according to either claim 153 or 154 wherein said trackable structure is an image of a wobble groove.

156. (Currently Amended) An optical disc assembly, comprising:

an optical disc comprising:

an information layer;

a substrate having a patterned surface and an additional surface, said patterned surface contributing to said information layer; an operational structure associated with said information layer, said operational structure trackable by an optical disc drive when

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said patterned surface of said substrate is presented closer to a laser of an optical disc reader than said additional surface of said substrate; ~~and~~

at least one ~~chemically reactive feature~~ nonoperational structure readable concurrently with said operational structure; and

a laser refractive cover removably attached to said optical disc, said cover configured to assist in focusing ~~assisting to focus~~ an incident beam on said information layer.

157. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed as a forward image in positive relief.

158. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed in a plane of said information layer that is most distal to said additional surface of said substrate.

159. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed as a forward image in negative relief.

160. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed in a plane of said information layer that is most proximal to said additional surface of said substrate.

161. (Previously presented) The optical disc assembly according to any one of claims 156, 157, 158, 159 or 160 wherein said operational structure includes a wobble groove.

162. (Withdrawn) The optical disc assembly according to claim 156 further including at least one analyte structure readable concurrently with said operational structure.

163. (Withdrawn) The optical disc assembly according to any one of claims 157, 158, 159 or 160 further including at least one analyte structure readable concurrently with said operational structure.

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164. (Withdrawn) The optical disc assembly according to claim 161 further including at least one analyte structure readable concurrently with said operational structure.

165. (Withdrawn) The optical disc assembly according to claim 162 wherein said analyte structure is disposed confocally with said operational structure.

166. (Withdrawn) The optical disc assembly according to claim 163 wherein said analyte structure is disposed confocally with said operational structure.

167. (Withdrawn) The optical disc assembly according to claim 164 wherein said analyte structure is disposed confocally with said operational structure.

168. (Withdrawn) The optical disc assembly according to claim 162 wherein said analyte structure is an analyte-specific signal element.

169. (Withdrawn) The optical disc assembly according to claim 163 wherein said analyte structure is an analyte-specific signal element.

170. (Withdrawn) The optical disc assembly according to claim 164 wherein said analyte structure is an analyte-specific signal element.

171. (Withdrawn) The optical disc assembly according to claim 165 wherein said analyte structure is an analyte-specific signal element.

172. (Withdrawn) The optical disc assembly according to claim 166 wherein said analyte structure is an analyte-specific signal element.

173. (Withdrawn) The optical disc assembly according to claim 167 wherein said analyte structure is an analyte-specific signal element.

174. (Withdrawn) The optical disc assembly according to claim 165 wherein said information layer further includes a reflective layer, and said analyte structure is disposed laser-

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proximal to said reflective layer when said substrate patterned surface is presented laser-proximal to said additional surface of said substrate

175. (Withdrawn) The optical disc assembly according to claim 165 wherein said information layer further includes a reflective layer, and said analyte structure is readably disposed on a disc surface more distant from said substrate additional surface than is said reflective layer

176. (Withdrawn) The optical disc assembly according to either claim 174 or 175 wherein said non-operational structure is disposed upon a surface of said reflective layer.

177. (Withdrawn) An optical disc assembly having a readable analyte structure, said disc assembly comprising:

an information layer having a structure trackable by an optical disc reader;
a cover to assist in focusing an incident beam on said information layer; and
at least one analyte structure, said trackable and analyte structures being concurrently readable by a single optical pickup.

178. (Canceled)

179. (Currently Amended) The optical disc assembly according to claim ~~178~~156 wherein said cover is reversibly attached to said disc.

180. (Currently Amended) The optical disc assembly according to claim ~~178~~156 wherein said cover is ~~moveably~~moveable while attached to said disc.

181. (Previously Presented) The optical disc assembly of claim 180 wherein said cover is hingeably attached to said disc.

182. (Previously Presented) The optical disc assembly according to claim 156 wherein said cover consists essentially of a material selected from the group consisting of plastic and glass.

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183. (Previously Presented) The optical disc assembly according to claim 182 wherein said cover consists essentially of plastic.

184. (Previously presented) The optical disc assembly according to claim 183 wherein said cover consists essentially of polystyrene.

185. (Previously Presented) The optical disc assembly according to claim 183 wherein said cover consists essentially of polycarbonate.

186. (Currently Amended) The optical disc assembly according to either claim 156 or ~~177~~ wherein said assembly has a diameter in a radial plane between 110 - 130 mm and a depth between 1.1 – 1.3 mm.

187. (Withdrawn) The optical disc assembly according to claim 156 or 177 wherein said analyte structure is disposed upon a disc-proximal side of said cover.

188. (Withdrawn) An optical disc having a readable analyte structure, said disc comprising:

- a first reflective layer;
- a second reflective layer;
- a analyte structure disposed on a predetermined side of said second reflective layer; and
- a trackable structure associated with at least one of said first and second reflective layers, said trackable structure configured to allow an incident beam of an optical disc reader to track therealong, and said analyte structure being disposed readably with said trackable structure.

189. (Withdrawn) The optical disc according to claim 188 wherein said analyte structure and said trackable structure are readable by a single optical pickup.

190. (Withdrawn) The optical disc according to claim 188 wherein said second reflective surface is semireflective.

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191. (Withdrawn) The optical disc according to claim 190 wherein said analyte structure is disposed confocally with a surface of either said first reflective layer or said semireflective layer.

192. (Withdrawn) The optical disc according to claim 190 wherein said analyte structure is disposed confocally with a surface of said semireflective layer.

193. (Withdrawn) The optical disc according to any one of claims 188, 189, 190, 191, or 192 wherein said analyte structure is disposed confocally with a surface of said first reflective layer.

194. (Withdrawn) The optical disc according to claim 193 wherein said analyte structure is disposed on a laser-proximal side of said first reflective layer.

195. (Withdrawn) The optical disc according to claim 193 wherein said analyte structure is disposed on a laser-distal side of said first reflective layer.

196. (Withdrawn) The optical disc according to any one of claims 190, 191, or 192 wherein said analyte structure is disposed between said first reflective layer and said semireflective layer.

197. (Withdrawn) The optical disc according to any one of claims 188, 189, 190, 191, or 192 wherein said trackable structure includes wobble groove.

198. (Withdrawn) The optical disc according to claim 193 wherein said trackable structure includes wobble groove.

199. (Withdrawn) The optical disc according to claim 194 wherein said trackable structure includes wobble groove.

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200. (Withdrawn) The optical disc according to claim 195 wherein said trackable structure includes wobble groove.

201. (Withdrawn) The optical disc according to claim 196 wherein said trackable structure includes wobble groove.

202. (Withdrawn) The optical disc according to claim 197 wherein said analyte structure is disposed confocally with said wobble groove.

203. (Withdrawn) The optical disc according to any one of claims 190, 191, or 192 wherein said reflective layer and semireflective layer are reversibly separable.

Claims 204 – 208. (Canceled)

209. (Withdrawn) A method for making a trackable optical disc having concurrently readable analyte structures, said method comprising the steps of:

applying a reflective layer to said patterned surface of a respective disc substrate according to any one of claims 156, 157, 158, 159, or 160; and

disposing a analyte structure confocally with said trackable operational structure.

210. (Withdrawn) The method according to claim 209 wherein said disposing step further includes disposing said analyte structure laser-proximal to said trackable operational structure.

211. (Withdrawn) The method according to either claim 209 or 210 wherein said trackable operational structure includes a wobble groove.